Use and Insertion of Informatics as Support Tool in Elementary Education

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Abstract: This paper is about an experience using computer as support to the elementary education. Focusing the teach-learning process and the intention to insert new mechanisms to improve it, the use of software in the educational target was suggested to demonstrate that computer can be an help full instrument of aid to regular education. This research used as methodology steps that guided the activities development, starting by the students even the guideline that will be employed in classroom as well as the right software educational choice.

Keywords: Education, Teach-Learning Process, Methodology, Arithmetic, Portuguese.

1. Introduction

The use of computer science as education option becomes more frequent actually. The Information Systems development calls the attention for the Informatics tools use in Education into the curricular activities schools.

The informatics in education is necessary basically four issues (Valente, 1993): computer, educative software, an enabled professor to use the computer as an educative tool and the student. All they have equal importance and each one possess its particularities.

Therefore, it's importance to define the characteristics, necessities and activities of each one of the four elements, so the computers in the education can be a success. However, the insertion of informatics in the school context still is an initiative in development, which reaches only one small parcel of the education institutions.
It’s possible to notice that basic education in Brazil, whatever using informatics or not as a support, it’s through a critical process in respect of income from students’ learning, and this can be verified by Ideb (Basic Education Development Index), an indicator created by the federal government to guide investment in education. Intending to insert new mechanisms to assist the teach-learning process, the use of the computer in the educational target was suggested to demonstrate that informatics can be an instrument in order to help all the education system. This could be realized through a research and extension project performed by the university (using the Informatics course) and public schools of two cities of north of Parana.

This paper aims to report all steps adopted through this project to perform the inclusion process of informatics as a support to elementary education, focusing the contents of mathematics and Portuguese disciplines. This article is divided in four sections: the first section presents the introduction to the research problem; second section describes the methodology adopted to the development of the project. In section three, the results are obtained at this moment and the conclusion is presented as the fourth section.

2. Methodology

For this project, that happens through informatics workshops reach the success, it was necessary to verify how the use of computers as educational tool encourages the learning process of disciplines scheduled in schools curricular program. These information were basic to select the ideals software and better dynamic they can be offer to work results out.

After this verification, next steps had been determined during the inclusion process and support of computer in elementary education. The sequence of the phases is described by:

1. Select of classrooms that would participate of the informatics lessons.
2. Choose the classes that participated in the information lessons.
3. Study of the PCN (National Curricular Parameters), Regional Curricular Directives, Project Pedagogical Political Project and Summaries of Portuguese and Mathematics disciplines of each partner school.
4. Determination of educational contents specified.
5. Select the Software to use, involving:
   a. Educational software evaluation method.
   b. Results obtained from educational software evaluation method.
   c. Presentation of the educational software for the pedagogical team.
6. Development of the lesson plans aiming the use of software as a support the contents selected in phase 2.
7. Organization of class and activities Schedule.

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8. Application of software according to their lesson plans.

At first, there was an approach with the involved schools in the process. This contact was useful to determine, according the school directors and teachers, the classrooms and disciplines to be prioritized. The choices of the classrooms and subjects were based on the schools necessities and it did not have interference of the project technique staff.

The choice prioritizes fourth grade as the contemplated group. It became necessary to analyze the Schools Pedagogical Politician Project in order to delimit the contents covered by this courses series in Portuguese and Mathematics disciplines. The subjects also were analyzed to establish a correct relation between the content from the classes and the content to be supported at informatics workshops.

Before elaborate the plans, three stages were fundamental for the contents in elementary education understanding. They are:

1. Detailed study of the National Curricular Parameters, PCN (PCN, 1997) focusing the contents considered to the basic education;
2. Research and know deeply the Regional Curricular Directives analyzing the differences between the national official document and regional particularities of Parana State, in order to know specific educational area where the project is located (Ideb, 2007).
3. Analysis of Educational Policy Project and summaries of the selected schools, in a way that both documents could be a real reflect of the local community necessities. With the summaries of Portuguese and Mathematics in hands, it was possible to perform all the informatics lessons plans according to the activities schedule given in classroom.

The study of these materials was necessary to form a consensus among the more comprehensive documents, such as the PCN\(^2\) and the reality in which the school is, besides being useful for the proposal of workshops based in Informatics.

After these studies, we go through methods for an educational software evaluation. This literature indicates, in an extensive way, the use of an instrument called checklist (Freire, 1997), (Sales, 2002), (Vieira, 2008), (Cosat, 2006), (Ergolist, 2008).

Checklist can be defined as a tool with a sequence of interactions (questions) capable to identify situations that cause problems during the educational software use, (Sales, 2002). Checklist is used in evaluations definite as predictive /analytical, and it is a technique that does not require the user participation, and it doesn’t required to use the software in a real situation (Sales, 2002).

In this paper, this evaluation was carried through by a checklist created by the team of developers (Martins, 2008), (Projinfoeduc, 2008), basing themselves on the existing literature, however with adaptations to contemplate the project necessities.

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\(^{2}\) PCN: an acronym to Parâmetros Curriculares Nacionais (National Curricular Parameters)
With the results obtained by checklist application, was possible to develop lesson plans to support the selected contents. The lesson plans were created using the parameters proposed by the pedagogical political project of the schools, emphasizing the Portuguese and Mathematics summary disciplines. For the lessons plans, it was necessary select the most appropriate software to enhance the content provided by such disciplines. A strategy used in planning was to use the software in the workshops, when the content is being explored in school. Thus, a lesson plan for each software was created.

The step number six is designed to help the schools team teaching, since the class organization and as well as its schedules had been determined by the schools.

So with these steps was possible to set the application software and chosen lesson plans in the informatics workshops. Each interaction with the students occurred weekly and during 50 minutes. They were seated in single computers (one user for computer) and received help from the members of the team of the project.

3. Obtained Results

Since the project started, 24 weeks of lessons and to 72 elementary school students, were attended in the workshops. Among the variety available, five software were selected and applied at Mathematics support and four to the Portuguese one.

The students felt so motivated that it reflects a higher attendance of them: in regular days, an average of 20% of the students does not appear to the classes, whereas in the workshops days this number falls 10% at least.

Teachers noticed an improvement in some Mathematical aspects, for example, better understanding of the arithmetic table concept. At the beginning of the workshop, the students presented great difficulties in solving exercises involving these operations, them at the end of semester, they could do with more facilities.

It is important to emphasize that during the development of the workshops, texts or figures interpretation has been widely used for the understanding of activities proposals, even in Portuguese Language targets as in the one in Mathematics. Also, regarding the interpretation should be emphasized that the major difficulties encountered in a first moment by the participating students.

This barrier was transposed adopting a set of varied activities that create an opportunity to the continuous exercise of texts and figures interpretation, these latter, mainly in the form of comics. Currently it has seen a gradual improvement by the students, regarding the ability of interpretation.

Some points that can be improved are listed as: localize information in a text, identification of idea central in the text, infer information from a text, to organize the facts in a specific text, recognize the characters characteristics, recognize the text intention, interpret information organized in tables and pictures, infer the
word meaning or expression from a context, analyze the consequent effect of meaning when use expressive punctuation.

A negative result has been observed, that was the difficulty of interaction between the members of project with some teachers. They were not having to involvement expected by the coordination of the project. It was hoped that students use the tools and content of workshops to facilitate the teaching in class, but most times not occurred. In many cases the connection between the activities given in the workshops with lessons in the classroom, one of the goals expected, were not observed.

4. Conclusion

The digital inclusion process had done following the presented stages. This systematization was import to organize the process and especially to facilitate its implantation.

Although the described methodology had been executed, still thus some difficulties that had been found during the project development, among them may be highlighted: poor infrastructure in terms of hardware, from the schools involved, lack of prerequisites, by the students in Portuguese and mathematics content and difficulty, initial contact with teachers of classes involved in the workshops.

However some points must be detached as positive also by workshop development team as well as the professors and directors of the schools: many students have, in this kind of activity, the first possibility to learn how to use a computer, more focused and dedicated students in the school, satisfactory effort of the pupils when deciding the activities proposals for software, the students creates discussions and reflect moments to accomplish the work, the pupils just request help when doubts appeared and they can’t solve alone, presenting an autonomy in the conduct of the activities, students with a perception to identify errors committed for themselves during the activities execution, text interpretation improvement, as for all the activities the students have to interpret what the software is asking for, such as mathematical points tables are being manipulated by the students more easily, thus facilitating the multiplication and division operations a lower rate of students absence through the days were the workshops occurred.

References


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